Selected Abstracts from the April Issue of the European Journal of Vascular and Endovascular Surgery

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Prediction of Cerebral Hyperperfusion after Carotid Endarterectomy with Transcranial Doppler

Pennekamp C.W.A., Tromp S.C., Ackerstaff R.G.A., Bots M.L., Immink R.V., Spiering W., de Vries J.P.P.M., Kappelle L.J., Moll F.L., Buhre W.F., de Borst G.J. Eur J Vasc Endovasc Surg 2012;43:371-6.

Objectives: To determine the diagnostic value for predicting cerebral hyperperfusion syndrome (CHS) by adding a transcranial Doppler (TCD) measurement in the early postoperative phase after carotid endarterectomy (CEA).

Design: Patients who underwent carotid endarterectomy between January 2004 and August 2010 and in whom both intra- and postoperative TCD monitoring were performed were included.

Methods: In 184 CEA patients the mean velocity (V_{mean}) preoperatively (V_1), pre-clamping (V_2), post-declamping (V_3) and postoperatively (V_4) was measured using TCD. The intra-operative V_{mean} increase $((V_3 - V_2)/V_2)$ was compared to the postoperative increase $((V_4 - V_1)/V_1)$ in relation to CHS. CHS was diagnosed if the patient developed neurological complaints in the presence of a preoperative V_{mean} increase >100%.

Results: Sixteen patients (9%) had an intra-operative V_{mean} increase >100% and 22 patients (12%) a postoperative V_{mean} increase of >100%. In 10 patients (5%) CHS was diagnosed; two of those had an intra-operative V_{mean} increase of >100% and nine postoperative V_{mean} increase >100%. This results in a positive predictive value of 13% for the intra-operative and 41% for the postoperative measurement.

Conclusions: Besides the commonly used intra-operative TCD monitoring additional TCD measurement in the early postoperative phase is useful to more accurately predict CHS after CEA.

Unselected Percutaneous Access with Large Vessel Closure for Endovascular Aortic Surgery: Experience and Predictors of Technical Success

Metcalfe M.J., Brownrigg J.R.W., Black S.A., Loosemore T., Loftus I.M., Thompson M.M. Eur J Vasc Endovasc Surg 2012;43:378-81.

Introduction: The effectiveness of percutaneous access with large vessel closure (pEVR) in non-selective groups of patients undergoing endovascular aneurysm repair (EVR) remains unclear. This study aims to identify factors that predict success in pEVR, performed using percutaneous access and the Prostar XL (Abbott Vascular, Redwood City, Calif) closure device.

Methods: Consecutive patients who underwent pEVR between April 2010 and March 2011 were identified from a prospectively maintained database. Procedural and postoperative outcomes were compared with consecutive patients who underwent endovascular aneurysm repair using standard open femoral access between April 2008 and March 2009. To determine the predictors of technical success of pEVR, the association between clinical, anatomical and procedural variables with technical success, were examined in a multiple logistic regression model.

Results: pEVR was attempted in 186 common femoral arteries (CFAs) with a technical success rate of 95.2% (177/186). Conventional open femoral access in the historic control group was performed in 208 CFAs. pEVR was associated with a reduced operation length (131 min [105 152] versus 150 min [124 195], $p \leq 0.001$) and length of stay (2 days [2 5] versus 4 days [2 7], $p = 0.01$) in patients undergoing infrarenal EVR.

In secondary analysis of outcomes following percutaneous access in 91 CFAs, pre-operative renal failure, CFA depth (min and max), CFA diameter (min and max) and operator experience predicted success of percutaneous access in univariate analysis. Operator experience was the only independent predictor of technical success ($p = 0.05$) after adjustment for all confounding variables.

Conclusion: pEVR using the Prostar XL device is effective in the majority of patients. In this study there were benefits in terms of reduced postoperative complications, shorter procedures and decreased lengths of stay. Operator experience is a predictor of technical success for pEVR, irrespective of clinical and morphological characteristics at baseline.

Mid-term Outcomes following Emergency Endovascular Aortic Aneurysm Repair for Ruptured Abdominal Aortic Aneurysms

Noorani A., Page A., Walsh S.R., Varty K., Hayes P.D., Boyle J.R. Eur J Vasc Endovasc Surg 2012;43:382-5.

Objective: Emergency Endovascular Aortic Aneurysm Repair (eEVAR) is a rapidly evolving approach to ruptured Abdominal Aortic Aneurysms (rAAA). Yet longer-term outcomes following eEVAR remain unclear. This study compares mid-term outcomes of eEVAR and open rAAA.

Methods: A prospective database for all patients undergoing eEVAR and open rAAA from January 2006 to April 2010 was analysed. Patients were offered eEVAR if anatomically suitable.

Results: 52 patients (45 male, median age 78 years (62–92 years), underwent eEVAR, 50 patients (44 male, median age = 71 (62–95 years) underwent open rAAA repair. In-hospital mortalities were 12% (6/52) for eEVAR, 32% (16/50) for open repair.

There were five re-interventions (10%) in the eEVAR group. The peri-operative survival benefits of eEVAR over open rAAA repair were maintained at 1 and 2 years post-operatively with open repair demonstrating a two-fold increased risk of mortality (Hazard ratio 2.2, Fisher Exact test, 95% Confidence Interval (CI) 1.108–4.62, $p = 0.0122$). Overall survival was 81% at 1 year, 73% at 2 years for eEVAR, and 62% at 1 year and 52% at 2 years for open rAAA repair.

Conclusion: EEVAR is associated with excellent mid-term survival in this cohort. We would recommend eEVAR as the management of choice for rAAA in anatomically suitable patients where local facilities and expertise exist.

Predictors of Outcome after Endovascular Repair for Chronic Type B Dissection

Mani K., Clough R.E., Lyons O.T.A., Bell R.E., Carrell T.W., Zayed H.A., Waltham M., Taylor P.R. Eur J Vasc Endovasc Surg 2012;43:386-91.

Objectives: To assess the durability of endovascular repair (TEVAR) in chronic type B dissection (CD) and identify factors predictive of outcome.

Design: Retrospective analysis of a prospective database.

Materials: Patients undergoing TEVAR for CD at a tertiary referral centre 2000–2010.

Methods: Analysis of pre-operative characteristics, operative outcome, false lumen thrombosis, aortic diameter and survival.

Results: 58 consecutive patients were included (49 elective, 9 urgent, mean age 66 years). Mean aortic diameter was 6.4 cm (Standard deviation SD 1.3 cm). Three patients died perioperatively (5%, 1 urgent, 2 elective). Complications included retrograde type A dissection ($n = 3$), paraplegia (1), and transient ischaemic attack (1). Estimated survival (Kaplan–Meier) was 89% (1-year) and 64% (3-years). Forty-seven patients had mid-term imaging follow-up at mean 38 months. Reintervention rate was 15% at 1-year and 29% at 3-years. Aortic diameter decreased in 24, was stable in 15 and increased in 8. Mid-term survival was higher in patients with aortic remodelling (reduction of aortic diameter >0.5 cm; 3-year 89%) than without (54%; Log Rank $p = 0.005$). Remodelling occurred with extensive false lumen thrombosis.

Conclusion: Satisfactory mid-term outcome after TEVAR for CD remains a challenge. Survival is associated with aortic remodelling, which is related to persistence of flow in the false lumen.

Residual Infrarenal Aortic Neck following Endovascular and Open Aneurysm Repair

De Bruin J.L., de Jong S., Pol J., van der Jagt M., Prinssen M., Blankensteijn J.D. Eur J Vasc Endovasc Surg 2012;43:415-8.

Background: The effectiveness of open and endovascular aneurysm repair of aortic abdominal aneurysms (AAAs) can be jeopardised by deterioration of the residual infrarenal neck of the aneurysm.

Objective: The study aims to determine the length of the residual infrarenal aortic segment after endovascular and open aneurysm repair.

Methods: In a multicentre randomised controlled trial comparing open and endovascular AAA repair, 165 patients were discharged after open AAA repair (OR) and 169 after endovascular repair (EVAR). Immediately after the operation, surgeons were asked to enter in the case record form whether the level of their anastomosis after open repair was within or beyond 10 mm of the caudal renal artery. Postoperative computed tomography (CT) scans that were obtained within 6 months after surgery were used for comparative analysis. The distance between the caudal renal artery and the proximal anastomosis of the (endo-) graft was measured using axial CT slices